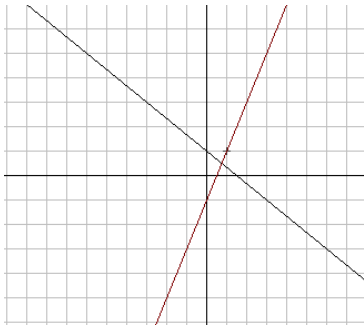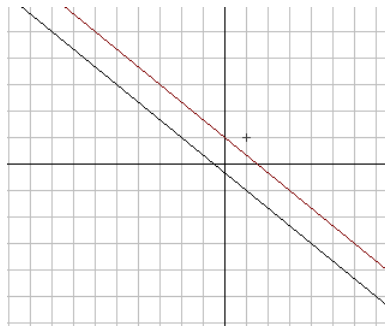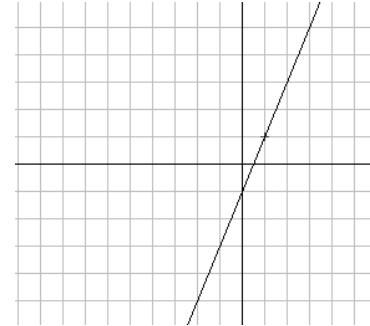Answer Key
1.

intersecting lines
different slopes (could have
   same y-intercepts)
independent lines
solution set = {intersection pt.}

parallel lines
same slope different
   y-intercepts
inconsistent lines
solution set = { }

coinciding lines
same slope and y-intercept

dependent lines
solution set = {all real numbers}

2. a) Addition and Subtraction

$$-1(2x+3y=14) \rightarrow -2x-3y=-14$$
$$2(x-5y=7) \rightarrow \ \ 2x-10y=14$$
$$-13y=0$$
$$y=0$$

$$x-5(0)=7$$
$$x=7 \qquad SS=\{(7,0)\}$$

b) Substitution

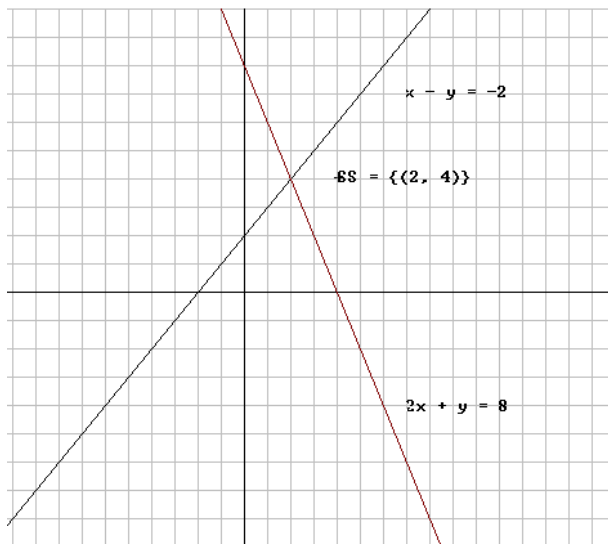$$2x+5y=9 \rightarrow 2x=-5y+9 \rightarrow x=\frac{-5y+9}{2}$$
$$3x-2y=4$$
$$^2 \cdot 3\left(\frac{-5y+9}{2}\right)-^2 \cdot 2y=^2 \cdot 4 \qquad 2x=-5(1)+9$$
$$-15y+27-4y=8 \qquad 2x=4$$
$$-19y=-19 \qquad x=2$$
$$y=1 \quad SS=\{(2,1)\}$$

c) 2x + y = 8, x − y = -2

3. a)

$$5 \cdot 4 \cdot \frac{2}{5} x + 5 \cdot 4 \cdot \frac{6}{4} y = 5 \cdot 4 \cdot 1 \quad \rightarrow 8x + 30y = 20$$

$$4 \cdot 7 \cdot \frac{-3}{4} x + 4 \cdot 7 \cdot \frac{2}{7} y = 4 \cdot 7 \cdot 2 \quad \rightarrow -21x + 8y = 56$$

b)

$$4 \cdot 2 \cdot \frac{3}{4} x + 4 \cdot 2 \cdot \frac{5}{2} y = 4 \cdot 2 \cdot 2 \quad \rightarrow 6x + 20y = 16$$

$$3 \cdot 5 \cdot \frac{-7}{3} x + 3 \cdot 5 \cdot \frac{2}{5} y = 3 \cdot 5 \cdot 4 \quad \rightarrow -35x + 6y = 60$$

4. a) Let x = larger number, y = smaller number
   x + y = 26, x = 5 + 2y

   b) Let x = one complementary angle , y = 2nd complementary angle
   x + y = 90, x = y − 5

   c) Let x = one supplementary angle, y = 2nd supplementary angle
   x + y = 180, 6x = 2 + 5y

   d) Let x = number of adult tickets sold, y = number of student tickets sold
   x + y = 1200, 20x + 10y = 20,000